

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF INDIANA
HAMMOND DIVISION

CHANCE T. KELHAM,)	
)	
Plaintiff,)	
)	
v.)	Cause No. 2:12-cv-316
)	
CSX TRANSPORTATION, INC.,)	
)	
Defendant.)	

OPINION AND ORDER

This matter is before the court on the Motion to Bar Defendant's Expert Witnesses Tsoumanis and Vosburgh Pursuant to *Daubert v. Merrell Dow* [DE 54] filed by the plaintiff, Chance Kelham, on May 28, 2015. For the following reasons, the motion is **DENIED**.

Background

This case arose from a locomotive accident that occurred on January 6, 2012. The plaintiff, Chance Kelham, has alleged that he suffered injuries as a result of the accident. He has claimed that he was stepping down three stairs into the main portion of the locomotive cab when the locomotive unexpectedly moved forward, which caused him to fall down the stairs. A second train collided with the rear of Kelham's train and caused the jolt. The defendant, CSX Transportation, Inc., has stipulated that it was negligent, and Kelham won a partial motion for summary judgment on comparative negligence. Therefore, the remaining issues for trial are causation and damages.

CSXT has retained two experts to dispute causation, Anastasio Tsoumanis, a biomechanical engineer, and Kevin Vosburgh, a mechanical engineer. Tsoumanis has concluded that the force from the accident was insufficient to cause Kelham to fall down the stairs and that

the impact would be unlikely to cause soft tissue injuries to the cervical and lumbar levels of the occupants. Additionally, he determined that the accident would subject the spine to minor sudden inertial loading, which was unlikely to cause acute injury or to aggravate pre-existing lumbar and cervical symptoms. Moreover, the accident would not be expected to cause structural changes to the soft tissue of the spine or further changes in the degenerative spinal processes.

To make the above conclusions, Tsoumanis relied on Vosburgh's calculations. Vosburgh calculated that Kelham's train moved less than nine inches during the impact and was accelerated forward less than seven inches. Additionally, he determined that the average acceleration during the impact was no more than 0.42 times the acceleration of gravity over a 300 millisecond period and that the speed of Kelham's train increased by three miles per hour or less during the impact. Moreover, the peak cervical and lumbar acceleration from the accident was comparable to various everyday activities like jumping, running, vertical leaping, and hopping off a step.

Discussion

Kelham has argued that the court should bar the expert testimony of both Tsoumanis and Vosburgh because their opinions were outside of their expertise or were based on unreliable methodologies. He has not challenged whether they were qualified in their relevant fields or whether their testimony was relevant. The admissibility of expert evidence is governed by Federal Rule of Evidence 702, *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 113 S. Ct. 2786, 125 L. Ed. 2d 469 (1993), and its progeny. *Winters v. FruCon Inc.*, 498 F.3d 734, 741 (7th Cir. 2007). Rule 702 provides:

A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an

opinion or otherwise if: (a) the expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue; (b) the testimony is based on sufficient facts or data; (c) the testimony is the product of reliable principles and methods; and (d) the expert has reliably applied the principles and methods to the facts of the case.

Under *Daubert*, the court exercises a “gatekeeping” function to ensure that expert testimony is both reliable and relevant pursuant to Rule 702. *Lees v. Carthage Coll.*, 714 F.3d 516, 521 (7th Cir. 2013); *Winters*, 498 F.3d at 741; *Kumho Tire Co., Ltd. v. Carmichael*, 526 U.S. 137, 141, 119 S. Ct. 1167, 143 L. Ed. 2d 238 (1999). The examination applies “to all kinds of expert testimony.” *U.S. v. Conn*, 297 F.3d 548, 555 (7th Cir. 2002) (noting that Rule 702 makes no distinction between “scientific” knowledge and other forms of specialized knowledge) (citing *Kumho Tire*, 526 U.S. at 149). The main purpose of the court’s gatekeeping requirement “is to make certain that an expert, whether basing testimony upon professional studies or personal experience, employs in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field.” *Kumho Tire*, 526 U.S. at 152.

In light of *Daubert* and *Kumho Tire*, the Seventh Circuit has endorsed a two-step analysis for district courts to use in evaluating expert testimony under Rule 702: first, the court must determine whether the expert’s testimony is “reliable;” and second, the court must determine whether the expert’s testimony is “relevant.” *Lees*, 714 F.3d at 521; *Hardiman v. Davita Inc.*, 2007 WL 1395568 (N.D. Ind. May 10, 2007). Like all questions of admissibility, those regarding a witness’s testimony are matters of law to be determined by the judge. *Hardiman*, 2007 WL 1395568 at *2 (quoting and citing *Porter v. Whitehall Labs., Inc.*, 791 F. Supp. 1335, 1342 (S.D. Ind. 1992), *aff’d*, 9 F.3d 607 (7th Cir. 1993). “The burden of showing an expert’s testimony to be relevant and reliable is with the proponent of the evidence.” *Bickel v. Pfizer, Inc.*, 431 F. Supp. 2d 918, 921 (N.D. Ind. 2006).

To satisfy the reliability requirement, the expert must be qualified in the relevant field, and his opinion must be based on sound methodology. *Smith v. Ford Motor Co.*, 215 F.3d 713, 718 (7th Cir. 2000); see *Hardiman*, 2007 WL 1395568 at n.1 (discussing courts’ ability to combine the qualifications inquiry into the reliability prong). In determining whether an expert is qualified to render an opinion, the court should consider his “full range of practical experience as well as academic or technical training” *U.S. v. Parra*, 402 F.3d 752, 758 (7th Cir. 2005) (quoting *Smith*, 215 F.3d at 718). Still, “[a] court’s reliability analysis does not end with its conclusion that an expert is qualified to testify about a given matter [T]he court’s gatekeeping function [also] focuses on an examination of the expert’s methodology.” *Smith*, 215 F.3d at 718. Hence, an expert’s work is admissible “only to the extent it is reasoned, uses the methods of the discipline, and is founded on data. Talking off the cuff—deploying neither data nor analysis—is not an acceptable methodology.” *Lang v. Kohl’s Food Stores, Inc.*, 217 F.3d 919, 924 (7th Cir. 2000).

Daubert outlined the following factors in assessing an expert’s methodology:

- (1) whether a theory or technique . . . can be (and has been) tested;
- (2) whether the theory or technique has been subjected to peer review and publication; (3) the known or potential rate of error; (4) the existence and maintenance of standards controlling the technique’s operation; and (5) whether the technique or method has met with general acceptance.

Conn, 297 F.3d at 555 (quoting *Daubert*, 509 U.S. at 593–94). No matter what type of specialized information is proffered, “the *Daubert* factors set forth above ought not be considered a definitive check list suitable for the evaluation of all kinds of evidentiary submissions involving specialized knowledge.” *Conn*, 297 F.3d at 555–56. The list should be flexible “to account for the various types of potentially appropriate expert testimony” rather than definitive or exhaustive. *Depulty v. Lehman Bros., Inc.*, 345 F.3d 494, 505 (7th Cir. 2003); see

Lees, 714 F.3d at 521 (“[B]ecause there are ‘many different kinds of experts, and many different kinds of expertise,’ the reliability analysis should be geared toward the precise sort of testimony at issue and not any fixed evaluative factors.”) (citing *Kumho Tire*, 526 U.S. at 150). The court may tailor its approach using the *Daubert* factors as a starting point in an effort to evaluate the particular evidence before it. *Conn*, 297 F.3d at 556.

The expert testimony must “fit the issue to which the expert is testifying.” *Chapman v. Maytag Corp.*, 297 F.3d 682, 687 (7th Cir. 2002) (internal citations and quotations omitted). Further, “[i]t is critical under Rule 702 that there be a link between the facts or data the expert has worked with and the conclusion the expert’s testimony is intended to support.” *U.S. v. Mamah*, 332 F.3d 475, 478 (7th Cir. 2003) (citing *Gen. Elec. v. Joiner*, 522 U.S. 136, 146, 118 S. Ct. 512, 139 L. Ed. 2d 508 (1997)). As the Supreme Court wrote: “nothing in either *Daubert* or the Federal Rules of Evidence requires a district court to admit opinion evidence that is connected to existing data only by the *ipse dixit* of the expert.” *Gen. Elec.*, 522 U.S. at 146. Therefore, an expert “who invokes ‘my expertise’ rather than analytic strategies widely used by specialists is not an expert as Rule 702 defines that term.” *Zenith Elec. Corp. v. WH-T Broad. Corp.*, 395 F.3d 416, 419 (7th Cir. 2005); see *Mamah*, 332 F.3d at 478 (“The court is not obligated to admit testimony just because it is given by an expert.”). Rather, the Seventh Circuit has reiterated: “[a]n expert who supplies nothing but a bottom line supplies nothing of value to the judicial process.” *Zenith Elec. Corp.*, 395 F.3d at 419 (collecting cases of reiteration).

Once evidence is deemed reliable, it still must be excluded if it is not relevant, which under Rule 702 means that it is not likely “to assist the trier of fact to understand the evidence or determine a fact in issue” *U.S. v. Hall*, 93 F.3d 1337, 1342 (7th Cir. 1996). The expert testimony must relate to an issue in the case, or it is not relevant. *Daubert*, 509 U.S. at 591. To

“assist” a jury, the Seventh Circuit has explained that the expert testimony will not aid a jury if it “addresses an issue of which the jury is already generally aware, and it will not contribute to their understanding of the particular dispute.” *Hall*, 93 F.3d at 1104. Alternatively, if, because of the expert’s knowledge of relevant facts, the expert’s particular use of those facts “will help the trier determine a fact, then the opinion is admissible under Rule 702.” *Porter*, 791 F. Supp. at 1343.

Kelham has argued that Vosburgh’s opinions were not based on sufficient facts or data and were the product of unreliable principles and methods. First, he has claimed that Vosburgh failed to consider the conclusion of Michael Alemprese, CSXT’s roadmaster. Alemprese guessed that the train moved a foot or two after watching a video of the accident. Vosburgh did not address Alemprese’s conclusion within his report. Alemprese is not an expert in accident reconstruction or mechanical engineering nor was he offering an expert opinion when he made that conclusion during his deposition. Vosburgh was not required to rely on Alemprese’s conclusion when making his report.

Second, Kelham has argued that Vosburgh did not use a reliable methodology to reach his opinions. Vosburgh indicated that he conducted an accident reconstruction to determine how far the train moved during the accident and at what acceleration. The train involved in the accident was equipped with an overhead video recording system. As part of the accident reconstruction, Vosburgh had an exemplar train, equipped with the same recording system as the train in the accident, placed at the impact location. The video from the accident could be observed frame by frame, but the video on the exemplar train was a live feed. Therefore, Vosburgh could not compare the videos frame by frame. Furthermore, Vosburgh indicated that

the video on the exemplar train was 172 inches above the track but that he did not know how high the camera was on the train involved in the accident.

The exemplar train was moved forward to simulate and measure the movement of the train in the accident. Vosburgh compared the live feed on the exemplar train to the video of the accident to determine how far the train moved in the accident. After moving the train three times, Vosburgh concluded that the train in the accident had moved slightly less than seven inches, which was the acceleration distance. Vosburgh then viewed the accident video and concluded that the movement lasted for five frames or approximately 0.294 seconds. Vosburgh then used those numbers to calculate the average acceleration rate.

Although not challenged by Kelham, Vosburgh is qualified to testify as a mechanical engineer. He has a bachelor's degree in mechanical engineering and a master's degree in automotive engineering. Vosburgh is a licensed engineer in Illinois and has worked as a consultant for over five years. Furthermore, he is trained in accident reconstruction and has given expert testimony on accident reconstructions in trials, depositions, and arbitrations previously.

Despite Kelham presenting some questions about Vosburgh's methodology, the court finds it reliable. Vosburgh performed an accident reconstruction to test his theory and to determine the acceleration distance of the train. He used an exemplar train to simulate the movement of the train during the accident. Furthermore, he relied on video footage from the accident and the simulation to compare the trains' movements. Upon determining the acceleration distance, he relied on mathematical formulas that Kelham has not challenged. Although CSXT did not cite peer reviewed articles about this methodology in its brief, Vosburgh cited supporting articles at the end of his report.

Rather than exclude Vosburgh's testimony, Kelham's concerns about Vosburgh's findings are best left for cross-examination. Kelham may question Vosburgh about the height of the cameras and the use of his naked eye to compare the videos at trial. Although not challenged by Kelham, this court also finds that Vosburgh's findings are relevant. His findings will assist the jury to understand the force of the impact on Kelham during the accident. Therefore, the motion to bar Vosburgh's testimony is **DENIED**.

Kelham also has argued that Tsoumanis should be barred from offering opinions outside of his expertise. Tsoumanis concluded that the collision was unlikely to aggravate Kelham's spondylolisthesis and that Kelham likely would have had noticeable bruises had he fallen. Kelham has not claimed that Tsoumanis is unqualified as a biomechanical engineer. Rather, he has argued that Tsoumanis' expertise does not permit him to testify regarding specific causation or issues relating to the practice of medicine. Tsoumanis does not have a medical degree and is not a licensed physician. Therefore, Kelham has claimed that Tsoumanis should not offer opinions as to the source or nature of Kelham's injuries.

CSXT has indicated that Kelham has mischaracterized Tsoumanis' opinions. CSXT has argued that Tsoumanis' opinions are generic causation opinions that indicate that the alleged injuries are inconsistent with the mechanics of this accident. Furthermore, it has claimed that biomechanical engineers are qualified to testify in general about the types of injuries that a force may generate.

In *Smelser v. Norfolk S. Ry. Co.*, the Sixth Circuit addressed whether a biomechanical engineer was qualified to testify about the causation of a specific injury. 105 F.3d 299, 305 (6th Cir. 1997), *abrogated on other grounds*, *Morales v. Am. Honda Motor Co.*, 151 F.3d 500, 515 (6th Cir. 1998). In *Smelser*, an employee sued his employer for injuries he sustained while

driving a company pick-up truck that was rear ended by another motorist. *Smelser*, 105 F.3d at 301. The employee alleged that a defective seat belt caused his injuries as opposed to the collision. *Smelser*, 105 F.3d at 301. The trial court allowed a biomechanical engineer to testify that the defective seat belt caused the employee's injuries instead of the collision. *Smelser*, 105 F.3d at 301. The Sixth Circuit reversed because the biomechanical engineer's testimony went beyond his expertise in biomechanics. *Smelser*, 105 F.3d at 301. The Sixth Circuit reasoned that the biomechanical engineer's expertise did not qualify him to testify about the cause of the employee's specific injuries because he was not a medical doctor and had not reviewed the employee's complete medical history. *Smelser*, 105 F.3d at 305. However, the biomechanical engineer was qualified to describe the forces generated in the collision and to speak in general about the types of injuries those forces could cause. *Smelser*, 105 F.3d at 305; see *Laski v. Bellwood*, 2000 WL 712502, at *3–4 (6th Cir. May 25, 2000) (quoting *Smelser* and finding that a biomechanical engineer may testify about the forces from a collision and the types of injuries those forces may cause in general); *Bowers v. Norfolk S. Corp.*, 537 F. Supp. 2d 1343, 1377 (M.D. Ga. 2007) (following *Smelser*).

Although not binding, this court will follow *Smelser* and the Sixth Circuit's reasoning. Tsoumanis may testify about the forces involved in the accident and, in general, what injuries those forces were expected to cause. Therefore, he may indicate what types of injuries were likely to occur based on the forces involved in this accident. However, Tsoumanis may not testify about the specific cause for Kelham's injuries or offer any medical opinions. Thus, he cannot testify whether the forces in the accident did or did not cause Kelham's specific injuries.

Kelham also has argued that Tsoumanis has offered testimony on credibility issues. An expert cannot testify about credibility issues. *Goodwin v. MTD Prods., Inc.*, 232 F.3d 600, 609

(7th Cir. 2000). Tsoumanis' report indicated that the accident could not have occurred as Kelham described. Tsoumanis may not testify whether he believes Kelham's testimony about the accident. However, Tsoumanis may testify how he believes the accident occurred, if his opinion is based on admissible scientific evidence.

Next, Kelham has argued that the court should exclude Tsoumanis' testimony under *Daubert*. He has not challenged Tsoumanis' qualifications to testify as a biomechanical engineer. However, he has claimed that Tsoumanis' opinions were based on unreliable methodologies. Specifically, Kelham has argued that Tsoumanis' opinions were not based on sufficient facts or data, were the product of unreliable principles and methods, and that Tsoumanis did not apply the principles and methods reliably to this case.

Although not challenged by Kelham, the court finds that Tsoumanis is qualified to testify as a biomechanical engineer. He has a bachelor's degree in mechanical and aeronautical engineering, a master's degree in biomedical engineering, and a Ph.D. in biomedical engineering. Additionally, Tsoumanis is accredited for accident reconstruction and his consulting expertise includes injury causation biomechanics.

First, Kelham has argued that Tsoumanis' opinions were not based on sufficient facts or data because he relied on Vosburgh's opinion. Kelham has claimed that Vosburgh's methodology was unreliable and, therefore, Tsoumanis' opinion should be barred because it relied on Vosburgh's unreliable findings. However, this court has found that Vosburgh's methodology was reliable. Furthermore, Tsoumanis may rely on Vosburgh's conclusions to make his findings.

Second, Kelham has argued that Tsoumanis failed to conduct any tests or to create any notes in his investigation. Additionally, he has claimed that Tsoumanis could not have relied on

photographs and measurements of the train because he completed his report before he reviewed that information. However, CSXT has provided an affidavit from Tsoumanis indicating that he reviewed the photographs and measurements. Furthermore, it stated that his opinions have not changed after reviewing those materials. He reviewed Kelham's deposition and medical records, Vosburgh's data and conclusions, and photographs and measurements of the locomotive. Additionally, he cited twenty-six scientific papers in his report that he reviewed when making his findings. Although Tsoumanis did not conduct his own tests, he may rely on an accident reconstruction performed by an engineer. *See Pa. Trust Co. v. Dorel Juvenile Group, Inc.*, 851 F. Supp. 2d 831, 839 (E.D. Pa. 2011) (finding an expert's opinion admissible when his review included an accident reconstruction performed by an engineer). Therefore, his opinions were based on sufficient facts and data.

Next, Kelham has argued that Tsoumanis' opinions were based on an unreliable methodology. He has claimed that Tsoumanis' methodology was unreliable because he did no mathematical calculations or computer simulations to determine body movement. Additionally, he stated that Tsoumanis failed to account for Kelham's center of gravity or body position at the time of the accident. Moreover, he indicated that Tsoumanis could have used a protected subject in an exemplar train to simulate Kelham's position upon impact.

To make his opinions, Tsoumanis applied injury causation analysis, which relies on engineering and medical science. ICA uses process analysis, a step-wise procedure in which each subsequent step relies upon its predecessors. In this case, Tsoumanis followed a five step approach:

1. Analysis of vehicle dynamics and accident reconstruction,
2. Analysis of occupant kinematics,
3. Analysis of biomechanics,
4. Determination of injury potential, and

5. Validation through medical analysis.

When following that approach, Tsoumanis relied on the information discussed above, including Vosburgh's data and conclusions, Kelham's deposition and medical records, and photographs and measurements of the train involved in the accident. Furthermore, Tsoumanis indicated that he saw, measured, and photographed the train involved in the accident. Although Tsoumanis did not explain ICA within his reports, he explained the methodology in his affidavit that CSXT submitted with its response brief. He also noted that the articles cited in his report support this methodology.

Tsoumanis' opinions were based on a reliable methodology. Tsoumanis explained that he used ICA, a process analysis, to reach his opinions. Additionally, he identified the five steps he followed to conduct his ICA. Although Tsoumanis did not cite the specific articles that supported his methodology, he cited a number of articles generally. The court is satisfied that he did not reach his opinions by invoking his expertise but rather used an analytical strategy based on data and the facts from this case.

Finally, Kelham has argued that Tsoumanis did not reliably apply his methodology to the facts of this case. He has claimed that Tsoumanis failed to account for Kelham's body position at the time of the impact. Specifically, that Tsoumanis failed to consider that Kelham was standing, leaning forward, and moving forwards and downwards with one foot at impact. Additionally, that Tsoumanis failed to consider that Kelham was bending down to enter the stairwell and had one foot off the ground at impact. Therefore, Kelham has argued that Tsoumanis' opinions relied on leaps of logic from the data to reach its conclusions.

Although Tsoumanis did not cite a study that involved stairs, he relied on a study that evaluated the postural responses of volunteers during unanticipated perturbations on moving

platforms. The study included perturbations in both the forwards and backwards direction. That study involved the forces and motions that Kelham would have been exposed to during the accident. Despite relying on a study that did not involve stairs, the court does not find that Tsoumanis' opinions were the result of leaps of logic from the data. He relied on his education, experience, training, relevant scientific literature, and data from this case to reach his conclusions. Additionally, some of the studies that Tsoumanis cited focused on Kelham's injuries, including preexisting spinal conditions. The court is satisfied that Tsoumanis did not speculate to reach his conclusions but applied an analytical methodology and relied on the above information.

Rather than exclude Tsoumanis' testimony, Kelham's concerns about Tsoumanis' opinions are best left for cross-examination. Kelham may question the weight of Tsoumanis' testimony because he failed to consider Kelham's center of gravity, body position, and forward movement. Furthermore, he may question Tsoumanis about his methodology and whether a different approach would have provided more accurate results. However, considering that Tsoumanis applied a methodology that required analysis and data, the court does not find his testimony unreliable. Although not challenged by Kelham, the court also finds Tsoumanis' testimony relevant. His testimony will assist the jury in determining whether CSXT caused Kelham's injuries. Therefore, the motion to exclude Tsoumanis' testimony is **DENIED**.

Based on the foregoing reasons, the Motion to Bar Defendant's Expert Witnesses Tsoumanis and Vosburgh Pursuant to *Daubert v. Merrell Dow* [DE 54] is **DENIED**.

ENTERED this 17th day of July, 2015.

/s/ Andrew P. Rodovich
United States Magistrate Judge